

LISTING OF CLAIMS:

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This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A process for producing a borate-containing, low-alkali material, comprising:
in which induction-heating a boron-containing melting material ~~is induction-heated~~ directly in an appliance using an alternating electromagnetic field, ~~and in which~~ wherein the boron-containing melting material includes ~~as a constituent~~ at least one metal oxide, ~~the~~ having metal ions ~~of which have~~ with a valency of at least two, the at least one metal oxide being in a quantitative proportion of at least 25 mol%, and ~~in which~~ the boron-containing melting material having a ratio of the molar substance quantities of silicon dioxide to borate ~~in the melting material is~~ of less than or equal to 0.5.
2. (Currently amended) The process as claimed in claim 1, ~~characterized in that the melt is~~ induction-heated directly using wherein the alternating electromagnetic field is a high-frequency field.
3. (Currently amended) The process as claimed in claim 1 ~~[[or 2]]~~, ~~characterized in that the~~ melt is induction-heated directly using an wherein the alternating electromagnetic field ~~with~~ has a frequency in the range from 50 kHz to 1500 kHz.
4. (Currently amended) The process as claimed in ~~one of the preceding claims,~~ characterized in that claim 1, wherein the ~~borate~~ boron-containing, low-alkali melting material comprises a borate-containing material, a borate glass, or a borosilicate glass with a high boric acid content.
5. (Currently amended) The process as claimed in ~~one of the preceding claims~~ characterized in that the quantitative proportion of alkali-containing compounds in claim 1, wherein the boron-containing melting material comprises a quantitative proportion of alkali-containing compounds of is less than 2%, ~~preferably less than 0.5%.~~

6. (Currently amended) The process as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, wherein the appliance comprises a skull crucible in which the
boron-containing melting material is melted.
7. (Currently amended) The process as claimed in claim 6, ~~in which~~ wherein the ~~melting~~
~~material is melted in a skull crucible~~ has ~~[[, the]]~~ walls ~~of which~~ that comprises cooled tubes
~~which~~ that are spaced apart from one another ~~in such a way that the tube walls adopt by a~~
spacing of between 2 mm and 4 mm, ~~preferably of 2.5 mm to 3.5 mm.~~
8. (Currently amended) The process as claimed in claim ~~[[6 or]]~~ 7, ~~characterized in that~~
wherein the cooled tubes of the skull crucible are short-circuited ~~in particular~~ in the region of a
high-frequency coil for emitting the alternating electromagnetic field.
9. (Currently amended) The process as claimed in claim 8, ~~characterized in that~~ wherein the
cooled tubes are short-circuited at, in each case, one location.
10. (Currently amended) The process as claimed in claim 8, ~~characterized in that~~ wherein the
cooled tubes are, in each case, short-circuited at their ends.
11. (Currently amended) The process as claimed in ~~one of claims 6 to 10,~~ ~~characterized in~~
~~that~~ claim 7, wherein the cooled tubes comprise tubes made from platinum, a platinum alloy, or
aluminum.
12. (Currently amended) The process as claimed in ~~one of claims 6 to 11,~~ ~~characterized in~~
~~that~~ claim 7, wherein the cooled tubes ~~of the skull crucible~~ are coated with a layer of platinum or
a platinum alloy.
13. (Currently amended) The process as claimed in ~~one of claims 6 to 12,~~ ~~characterized in~~
~~that~~ claim 7, wherein the cooled tubes ~~of the skull crucible~~ are coated with plastic, ~~in particular~~
~~with~~ fluorine-containing plastic.

14. (Currently amended) The process as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, further comprising adding a batch is added in the form of pellets to
the appliance.

15. (Currently amended) The process as claimed in ~~one of the preceding claims,~~
~~characterized in that the melt is stirred while the batch is being melted down~~ claim 1, further
comprising stirring the boron-containing melting material during the induction-heating.

16. (Currently amended) The process as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, further comprising blowing a gas is blown into the melt the boron-
containing melting material.

17. (Currently amended) The process as claimed in claim ~~[[15 or]]~~ 16, ~~characterized in that~~
further comprising introducing a bubbling tube is introduced into the melt boron-containing
melting material and blowing the [[a]] gas is blown into the melt boron-containing melting
material through a nozzle of the bubbling tube.

18. (Currently amended) The process as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, further comprising refining the boron-containing melting material
is refined.

19. (Currently amended) The process as claimed in claim 18, ~~characterized in that the batch~~
wherein the boron-containing melting material is melted and refined in at least two appliances
connected in series.

20. (Currently amended) The process as claimed in claim 18, ~~characterized in that batch~~
wherein the boron-containing melting material is melted and refined in the same appliance.

21. (Currently amended) The process as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, further comprising discontinuously melting the boron-containing
melting material is melted discontinuously in the appliance.

22. (Currently amended) The process as claimed in ~~one of the preceding claims,~~
~~characterized in that~~ claim 1, further comprising continuously melting the boron-containing
~~melting material is melted continuously in the appliance.~~

23. (Currently amended) ~~The process as claimed in one of the preceding claims,~~
~~characterized in that the~~ A melting material has a composition in which for producing a borate-
containing, low-alkali material, comprising:

B_2O_3 15 to 75 mol%,

SiO_2 0 to 40 mol%,

Al_2O_3 , Ga_2O_3 , In_2O_3 0 to 25 mol%,

$\Sigma M(II)O, M_2(III)O_3$ 15 to 85 mol%,

$\Sigma M(IV)O_2, M_2(V)O_5, M(VI)O_3$ 0 to 20 mol%, and

$\Sigma M(I)_2O$ is $[[<]]$ less than 0.50 mol% are present, and in which wherein

$X(B_2O_3)$ is $[[>]]$ greater than 0.50, where

$X(B_2O_3) = B_2O_3 / (B_2O_3 + SiO_2)$,

$M(I) = Li, Na, K, Rb, Cs$,

$M(II) = Mg, Ca, Sr, Ba, Zn, Cd, Pb, Cu$,

$M(III) = Sc, Y, ^{57}La-^{71}Lu, Bi$,

$M(IV) = Ti, Zr, Hf$,

$M(V) = Nb, Ta$, and

$M(VI) = Mo, W$.

24. (Currently amended) The ~~process~~ melting material as claimed in claim 23, ~~characterized~~
~~in that wherein the~~ B_2O_3 ~~content in the melting material is from 15 to 75 mol% and~~ $X(B_2O_3)$ is
 $[[>]]$ greater than 0.52.

25. (Currently amended) The ~~process~~ melting material as claimed in claim 23, wherein or 24,
~~in which in the melting material the content of~~

B_2O_3 is 20 to 70 mol%,

the content of $\Sigma M(II)O, M_2(III)O_3$ is 15 to 80 mol%, and

$X(B_2O_3)$ is $[[>]]$ greater than 0.55.

26. (Currently amended) The ~~process~~ melting material as claimed in ~~one of claims 23 to 25,~~
~~characterized in that in the melting material the content of~~ claim 23, wherein

B_2O_3 is 28 to 70 mol%,

the content of $B_2O_3 + SiO_2$ is 50 to 73 mol%,

the content of Al_2O_3 , Ga_2O_3 , In_2O_3 is 0 to 10 mol%, and

the content of $\Sigma M(II)O, M_2(III)O_3$ is 27 to 50 mol%, and

$X(B_2O_3)$ is $[[>]]$ greater than 0.55.

27. (Currently amended) The ~~process~~ melting material as claimed in claim 26, ~~characterized~~
~~in that a composition is selected for the melting material in which:~~ wherein

B_2O_3 is 36 to 66 mol%,

SiO_2 is 0 to 40 mol%,

$B_2O_3 + SiO_2$ is 55 to 68 mol%,

Al_2O_3 , Ga_2O_3 , In_2O_3 is 0 to 2 mol%,

$\Sigma M(II)O, M_2(III)O_3$ is 27 to 40 mol%,

$\Sigma M(IV)O_2, M_2(V)O_5, M(VI)O_3$ is 0 to 15 mol% ~~are present~~, and

$X(B_2O_3)$ is $[[>]]$ greater than 0.65.

28. (Currently amended) The process as claimed in ~~one of the preceding claims, in particular claim 1, wherein the borate-containing, low-alkali material is useful~~ for the production of borate glasses and borosilicate glasses with a high boric acid content for optical applications, ~~characterized in that the boron-containing melting material has the following composition comprising:~~

B_2O_3 45 to 66 mol%,
 SiO_2 0 to 12 mol%,
 $B_2O_3 + SiO_2$ 55 to 68 mol%,
 $Al_2O_3, Ga_2O_3, In_2O_3$ 0 to 0.5 mol%,
 $\Sigma M(II)O$ 0 to 40 mol%,
 $\Sigma M_2(III)O_3$ 0 to 27 mol%,
 $\Sigma M(II)O, M_2(III)O_3$ 27 to 40 mol%,
 $\Sigma M(IV)O_2, M_2(V)O_5, M(VI)O_3$ 0 to 15 mol%, and ~~in which~~ wherein
 $X(B_2O_3)$ is $[[>]]$ greater than 0.78, where
 $M(II) = Mg, Ca, Sr, Ba, Zn, Cd, Pb$.

29. (Currently amended) The process as claimed in ~~one of the preceding claims, in particular claim 1, wherein the borate-containing, low-alkali material is useful~~ for the production of borate glasses and crystallizing boron-containing materials, ~~characterized in that the boron-containing melting material has a composition in which the following contents are present~~ comprising:

B_2O_3 30 to 75 mol%,
 SiO_2 $[[<]]$ less than 1 mol%,
 $Al_2O_3, Ga_2O_3, In_2O_3$ 0 to 25 mol%,
 $\Sigma M(II)O, M_2(III)O_3$ 20 to 85 mol%, and
 $\Sigma M(IV)O_2, M_2(V)O_5, M(VI)O_3$ 0 to 20 mol%, and ~~in which~~ wherein
 $X(B_2O_3)$ is $[[>]]$ greater than 0.90.

30. (Currently amended) The process as claimed in ~~one of the preceding claims, in particular claim 1,~~ wherein the borate-containing, low-alkali material is useful for producing crystallizing borate-containing material, wherein the boron-containing melting material has a composition in which comprising:

B_2O_3 20 to 50 mol%,

SiO_2 0 to 40 mol%,

Al_2O_3 , Ga_2O_3 , In_2O_3 0 to 25 mol%,

$\Sigma M(II)O, M_2(III)O_3$ 15 to 80 mol%, and

$\Sigma M(IV)O_2, M_2(V)O_5, M(VI)O_3$ 0 to 20 mol%, ~~are present, and in which~~ wherein

$X(B_2O_3)$ is $[[>]]$ greater than 0.52.

31. (Currently amended) The process as claimed in claim 30, ~~characterized in that~~ wherein $X(B_2O_3)$ is $[[>]]$ greater than 0.55.

32. (Currently amended) The process as claimed in claim 30 ~~or 31, characterized in that~~ , wherein the quantitative proportions are

$\Sigma M(II)O$ 15 to 80 mol%, and

$M_2(III)O_3$ 0 to 5 mol%, and

$X(B_2O_3)$ is $[[>]]$ greater than 0.60.

33. (Currently amended) The process as claimed in ~~one of claims 30 to 32, characterized in that~~ claim 30, wherein the quantitative proportion of substances selected from a group consisting of Al_2O_3 , Ga_2O_3 and In_2O_3 does not exceed 5 mol%.

34. (Currently amended) The process as claimed in ~~one of claims 30 to 33, characterized in that the composition for the melting material is selected in such a way that~~ claim 30, wherein the quantitative proportion of substances selected from a group consisting of Al_2O_3 , Ga_2O_3 and In_2O_3 does not exceed 3 mol%, ~~and in which~~ the quantitative proportion of $\Sigma M(II)O$ is in the range from 15 to 80 mol%, ~~and in which~~ $X(B_2O_3)$ is $[[>]]$ greater than 0.65, where $M(II) = Zn, Pb, Cu$.

35. (Currently amended) The process as claimed in ~~one of the preceding claims,~~
~~characterized in that a composition is selected for~~ claim 1, wherein the boron-containing melting
~~material in which comprises:~~

B_2O_3 20 to 50 mol%,

SiO_2 0 to 40 mol%,

Al_2O_3 0 to 3 mol%,

$\Sigma ZnO, PbO, CuO$ 15 to 80 mol%,

Bi_2O_3 0 to 1 mol%, and

$\Sigma M(IV)O_2, M_2(V)O_5, M(VI)O_3$ 0 to 0.5 mol% ~~are present, and in which~~ wherein

$X(B_2O_3)$ is $[[>]]$ greater than 0.65.

36. (Currently amended) The process as claimed in claim 35, ~~characterized in that a~~
~~composition is selected for the melting material in which the quantities of substance are~~ wherein

B_2O_3 is 20 to 42 mol%,

SiO_2 is 0 to 38 mol%,

$\Sigma ZnO, PbO$ is 20 to 68 mol%,

CuO is 0 to 10 mol%,

$\Sigma ZnO, PbO, CuO$ is 20 to 68 mol%, and

Bi_2O_3 is 0 to 0.1 mol%, and ~~in which~~ wherein

$X(B_2O_3)$ is $[[>]]$ greater than 0.65.

37. (Currently amended) The process as claimed in ~~one of claims 1 to 36, a composition~~
~~which~~ claim 1, wherein the boron-containing melting material is free of PbO and CdO is selected
~~for the melting material.~~